



# Shelf Stable Pocket Sandwiches



Shelf stable pocket sandwiches will enhance the variety of individual ration components while providing a much needed eat-on-the-move capability. Current varieties include Pepperoni, Italian, and Barbecue Chicken - all of which were given high marks by the warfighter during field tests. Additional varieties including breakfast sandwiches are under development.

## Why is it Needed?

Current military doctrine requires troops to be highly mobile, agile and sustainable under any environmental condition, climate and location - including temperate, arctic, jungle, desert, mountain, and urban terrain. Often times the warfighter does not have the time to stop and prepare a meal. An eat-out-of-hand, eat-on-the-move capability is required for these situations. The pocket sandwich supports the requirement for the First Strike Ration, a new assault ration for the highly mobile warfighter.

## Technology:

Hurdle technology is used to provide sandwiches with a minimum 3-year shelf life when held at or below 80°F (6 months at 100°F). This technology uses a number of hurdles (preservation techniques) to inhibit the growth of microorganisms. The use of a combination of several milder barriers rather than a single more severe preservation method (e.g. thermal processing) produces a safe, stable food with increased quality. This multi-targeted approach is equally effective as a preservation method for preventing microbial growth.

Current hurdles include controlling water activity, pH, headspace oxygen and the use of modified atmosphere and barrier packaging. Also under consideration is the use of advanced intermediate moisture meat technology, inter-component edible films and coatings. Water activity can be lowered and controlled by the incorporation of various humectants such as salt, sugars, and glycerol and by controlling baking time and temperature. The pH is controlled by choosing foods that are naturally acidic or by adding acetic acid (vinegar for example). Since oxygen is also essential for the growth of some microorganisms and can create detrimental chemical reactions a further hurdle is incorporated through the use of the foil tri-laminated pouches and oxygen absorbing sachets. Microbial challenge studies have concluded that the combined effect of lowered water activity and pH is successful in preventing microbial growth.



## Benefits:

**Enhanced Mobility...**can be eaten directly from the package and requires no refrigeration or heating.

**Flexible...**sandwiches can be eaten hot or cold, individually or as part of a complete meal.

## Point of Contact:

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